Amendments to th Specification

Please add new paragraphs [00018.1] and [00018.2] following the title SUMMARY OF THE INVENTION.

[00018.1 The present invention is a constant flow control wellhead assembly for a landfill gas well extraction system. The system includes a manually controlled valve that can be positioned open, closed, or in any position in between. The manually controlled valve is connected such that all flow from the well passes through the valve. A pressure-regulating valve is connected upstream of the manual valve such that all flow from the well also passes through this valve. A pressure tap in the piping upstream of the pressure-regulating valve and a pressure tap in the piping between the manually controlled valve and the pressure-regulating valve are installed to measure the differential pressure across the pressure-regulating valve. Another pressure measurement tap in the piping downstream of the manually controlled valve is installed so the differential pressure across the entire wellhead assembly may be measured. A sample tap is also installed upstream of the pressure-regulating valve to sample the landfill gas passing through the wellhead, and an electronic display and control circuit is provided so the differential pressure across the pressure-regulating valve may be displayed to set the desired position of the manually controlled valve, and the differential pressure across the entire wellhead assembly may be displayed and used as a control parameter for the pressure-regulating valve.

[00018.2] The constant flow control wellhead is used by installing the system in a section of piping between each well, or grouping of wells with a single extraction pipe, and the well extraction vacuum source. The differential pressure-regulating valve in the wellhead gas path is initially opened to a nominal position that corresponds to a unique flow rate, and the manual valve is also partially opened. The differential pressure across the differential pressure-regulating valve is measured, and the manual valve position adjusted to set the desired differential pressure across the differential pressure-regulating valve. The nominal position of the differential pressure-regulating valve and the desired differential pressure together creates a unique flow rate through the wellhead assembly. The flow rate is controlled by the differential pressure across the complete wellhead assembly. The differential pressure across the complete wellhead assembly is measured,

and the differential pressure-regulating valve position is adjusted automatically as needed to maintain the desired differential pressure across the complete wellhead assembly. The gas composition of each landfill gas well is measured on a periodic basis, and the gas composition is evaluated to determine if the flow rate from the landfill gas extraction well should be modified to prevent long term over or under extraction. The flow adjustment is done by again adjusting the position of the differential pressure-regulating valve, then measuring the adjusted differential pressure across the differential pressure-regulating valve, followed by adjusting the position of the manual valve to obtain the desired differential pressure across the differential pressure-regulating valve, then measuring the adjusted differential pressure across the complete wellhead assembly, and adjusting the regulating valve position automatically, as needed, to maintain the desired differential pressure across the complete wellhead assembly.

Please replace paragraph [00026] with the following amended paragraph:

[00026] Figure 3 shows the arrangement of the methane gas extraction constant flow control wellhead assembly.

Please replace paragraph [00028] and [00029] with the following amended paragraphs:

[00028] Figure 5A is an isometric view of the methane gas extraction constant flow control wellhead assembly.

[00029] Figure 5B shows the control circuit ~~inputs and outputs~~. It includes descriptive legends to show the inputs and outputs used for the methane gas extraction constant flow control wellhead assembly.

Please replace the paragraphs between paragraph [00029] and [00030] with the following amended paragraphs:

Reference Numbers in Drawings

[00029.1] These reference numbers are used in the drawings to refer to area or features of the methane gas extraction constant flow wellhead.

[00029.2] 50 Manual Flow Regulating and Shut-off Valve
[00029.3] 52 Differential Pressure-Regulating Valve
[00029.4] 54 Upstream Pressure Measurement Tap
[00029.5] 55 Intermediate Pressure Measurement Tap
[00029.6] 56 Downstream Pressure Measurement Tap
[00029.7] 58 Temperature Sensor
[00029.8] 60 Sample Collection Port
[00029.9] 62 Control Section Housing
[00029.10] 64 Control Circuit
[00029.11] 66 Data Port
[00029.12] 70 Differential Pressure Regulating Valve Flow Area
[00029.13] 72 Differential Pressure Regulating Valve Flap
[00029.14] 74 Differential Pressure Adjustment Valve Stem
[00029.15] 76 Differential Pressure Regulating Valve Stepper Motor
[00029.16] 78 Differential Pressure Regulating Valve Flap Position Sensor
[00029.17] 80 Differential Pressure Regulating Valve Body and Bonnet
[00029.18] 82 Wellhead Piping

Please add the following new paragraph after paragraph [00029.2]:

[00029.2.1] 51 Manual Valve Handle

Please add the following new paragraphs after paragraph [00029.18]:

[00029.19] 100 Well Extraction Pipe
[00029.20] 102 Pipe to Well Extraction Vacuum Source
[00029.21] 104 Data Port
[00029.22] 106 Battery
[00029.23] 108 Straight Lower Edge of the Flap
[00029.24] 120 Methane Gas Extraction Constant Flow Control Wellhead Assembly

Please replace paragraphs [00034] through [00037] with the following amended paragraphs:

[00034] The complete wellhead assembly gas path includes the flow control components as shown in figures 3 and 5A, and consists of a manual flow regulating and shut-off valve (50), an automatically adjusting differential pressure-regulating valve (52), arranged in series in the flow path from a well, and pressure sensing taps (54, 55, 56). The flow is controlled at the desired flow rate through action of the differential pressure-regulating valve, which throttles the gas flow to achieve a constant differential pressure across the complete wellhead assembly. The differential pressure across the complete wellhead assembly is the difference in pressure measurements between the inlet to the differential pressure-regulating valve and the outlet of manual flow regulating and shut-off valve as measured at the upstream pressure tap (54) and the downstream pressure tap (56). This differential pressure is used as the operating control parameter for the pressure-regulating valve. Maintaining the differential pressure across the complete wellhead assembly at the desired operating control point assures a constant flow rate.

[00035] The differential pressure-regulating valve (52) maintains the constant flow rate through movement of the differential pressure-regulating valve flap (72) to vary the throttling of the gas flow. The manual flow regulating and shut-off valve (50) is adjusted by turning the valve handle (51) when the wellhead is placed in service to maintain the differential pressure in the range of 1 to 4 inches water column (WC) across the differential pressure-regulating valve, as measured between the upstream pressure tap (54) and the intermediate pressure tap (55). This adjustment of the manual valve to set the differential pressure across the differential pressure-regulating valve range optimizes the throttling capability of the differential pressure-regulating valve.

[00036] The minimum requirements for a wellhead consists of a section of piping with a valve (50), used for manual flow regulation and shut-off ~~(50)~~, and a ~~tap~~ sample collection port (60) with a shut-off valve for obtaining gas samples ~~(60)~~ to determine the gas composition. The present invention adds to this an automatically controlled differential pressure-regulating valve (52); three pressure sensing taps, the upstream pressure tap (54), on the gas well side of the pressure-regulating valve, the intermediate pressure tap (55) between the pressure-regulating valve and the manual flow regulating and shut-off valve, and the downstream pressure tap (56), located downstream of the manual valve

(50); a temperature sensor ~~(60)~~(58) upstream of the differential pressure regulating valve; a control circuit (64); and a data port (66).

[00037] In figure 3 and figure 3A the ~~arrow labeled "From Well"~~ box (100) is the well extraction pipe coming from the landfill wells, previously described, and it depicts the flow from the landfill to the wellhead assembly, and is also called the upstream direction. The ~~arrow labeled "To Vacuum Source"~~ box (102) is the pipe to the well extraction vacuum source, previously described, and it depicts the flow from the wellhead assembly, and is also called the downstream direction.

Please replace paragraphs [00048] and [00049] with the following amended paragraphs:

[00048] The piping (82) adjacent to the automatically controlled differential pressure-regulating ~~adjustment~~ valve (52) ~~(82)~~, as shown in figures 3 and 5A, contains ~~a~~ an upstream pressure measurement ~~sensing~~ tap (54) upstream of the valve, ~~a~~ an intermediate ~~second~~ pressure measurement ~~sensing~~ tap (55) downstream of the valve, and a downstream ~~third~~ pressure measurement ~~sensing~~ tap (56) downstream of the manual flow regulating and shut-off valve ~~(56)~~. Sensors in the control circuit (64), with inputs and outputs shown in figure 5B, measure these pressures and the difference in pressure is calculated from these measurements to yield the differential pressure across the differential pressure-regulating valve and the differential pressure across the complete wellhead assembly. These differential pressures may be displayed using the data port in the control circuit. There also is a temperature sensor (58) upstream of the valve. This signal is also transmitted to the control circuit. Another tap is used as a sample collection port (60).

[00049] The control circuit (64) is battery (106) powered in the preferred embodiment, but may be powered from external sources. The circuit drives the regulating valve stepper motor (76) to position the regulating valve based on any measured deviation from the differential pressure setpoint, which is the differential pressure across the complete wellhead assembly after the desired flow rate has been established. The control algorithm for this is simple as the regulating valve flow area (70), shown in figure 4, is shaped to provide a linear, or constant, change in differential pressure for a given valve flap

movement over the entire range of valve travel. This linear relationship is shown for the preferred differential pressure range of 1.5 to 2.5 inch WC in figure 2. The control circuit is normally in a dormant state and approximately every 10 minutes will go to an active state where the differential pressure value is sampled and processed by averaging the values over time to account for fluctuations in the measurements, and to allow rounding the average. If needed, the control then produces increments of valve movement proportional to any deviation of the average differential pressure from the differential pressure setpoint, and then it returns to the dormant state.

Please replace paragraph [00051] with the following amended paragraph:

[00051] Federal regulations (40 CFR 755 and 756) require monthly measurement of the temperature of the landfill gas and the gauge pressure at each well. ~~Figures 5A and~~ Figure 5B shows the data port ~~(66)~~ (106) on the control circuit that provides the display capability, using a portable hand-held computing device such as a personal digital assistant (PDA). The control circuit provides the temperature and pressure data handling through the data port. The portable hand-held computing device is used to adjust the differential pressure setpoint that the control circuit uses for positioning the regulating valve, and the temperature setpoint used to shutdown the well. The control circuit also provides information on battery status and the status of the control circuit, its sensors, and the stepper motor. It also may provide power to warning devices in the event of such conditions as low battery voltage or high gas temperature.

Please replace paragraph [00054] with the following amended paragraph:

[00054] Startup following installation of the constant flow control wellhead requires checking for closure of the manual flow regulating and shut-off valve, establishing battery power to the wellhead, and then disabling the control circuit differential pressure monitoring using a personal digital assistant (PDA) attached to the data port. The differential pressure-regulating valve is then positioned using the same data port connection at a nominal position established by experience with the optimal flow rate from the well. The manual flow regulating and shut-off valve is then opened to establish flow from the well as the real-time differential pressure reading is monitored on the PDA.

The manual flow regulating and shut-off valve is then set to a position by turning the handle to establish a differential pressure near the desired value of 2 inches WC across the differential pressure-regulating valve.